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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PENG, FRED H

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/814,621	Applicant(s) BUSSON ET AL.	
	Examiner FRED PENG	Art Unit 2426	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 51-80 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 73-80 is/are allowed.
- 6) ☒ Claim(s) 51-59, 63-65 and 69-72 is/are rejected.
- 7) ☒ Claim(s) 52, 60-62 and 66-68 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered 07/21/2010.

Status of Claims

2. Claims 51-80 are pending in this application.

Claim Objections

3. Claim 52 is objected to because of the following informalities: Claim 52 is listed twice and the second Claim 52 is the same claim as Claim 58. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 51, 53-59, 63-65 and 69-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomasz (US 6,400,416) in view of Uramoto et al (US 7,034,731), Keate et al (US 5,953,636), Birleson (US 2007/0182866) and MPEP 2144.04.

Regarding Claims 51, 63-65 and 71, Tomasz discloses an apparatus with corresponding circuit (FIG.3) and method, comprising:

an integrated circuit embodied on a monolithic substrate in which each of the following circuit components are fabricated on that single monolithic substrate (Col 1 lines 6-8):

an input adapted to receive an analog signal including a plurality of channels (Cable band input 50-850 MHz);

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an upconversion device to upconvert the received analog signal (222; Col 3 lines 27-31); a first port for off substrate connection to an input of a bandpass filter and coupled to receive the upconverted analog signal for application to the bandpass filter; a second port for off substrate connection to an output of the filter to receive a filtered upconverted signal from the bandpass filter (210); and

a downconversion device coupled to the second port to downconvert the filtered upconverted signal to a baseband signal centered at zero frequency (240; Col 3 lines 47-50);

a baseband filtering circuit that filters the baseband signal to generate a filtered analog baseband signal, the baseband filtering circuit having an upper cutoff frequency greater than a frequency half-width of one channel (Col 3 lines 11-14, 31-33; Col 4 lines 51-54; European version with 4 MHz is greater than a frequency half-width of one channel).

Furthermore, Tomasz discloses a SAW filter as a conventional bandpass filter for a upconversion stage which is implemented outside of the integrated circuit because of its bulk size (Col 1 lines 43-50; Col 3 lines 11-14).

Tomasz further discloses a digital signal processor connected to the tuner integrated circuit with a multibit analog/digital conversion stage linked to the output of the baseband filtering stage and a digital processing block comprising a stage for correcting defects in phase-and amplitude-pairing of the two quadrature paths (Col 6 lines 21-27; Col 5 lines 16-24).

However, Tomasz is not clear about sampling frequency is at least ten times the upper cutoff frequency of the baseband filtering circuit and a digital baseband decimating filter that filters the digital baseband signal to generate a filtered digital baseband signal.

In an analogous art, Uramoto discloses the sampling rate of the A/D converter should be, for example, at least F_s with respect to the input analog signal of which the spectrum band is limited to $F_s/2$. However, practically, the sampling rate is higher by several times to several tens times.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tomasz's apparatus to include sampling frequency is at least ten

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times the upper cutoff frequency of the baseband filtering circuit, as taught by Uramoto as a common engineering practice.

Furthermore, Keate discloses a digital baseband decimating filter that filters the digital baseband signal to generate a filtered digital baseband signal (FIG.3, element 48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined apparatus of Tomasz and Uramoto to include a digital baseband decimating filter that filters the digital baseband signal to generate a filtered digital baseband signal, as taught by Keate to reduce additional digital noise.

Tomasz and Keate each disclose the fabrication of each individual circuitry as mentioned above, but is silent about the integration of each individual circuitry on a single monolithic substrate.

In an analogous art, Birleson discloses a highly integrated television tuner on a single microcircuit including the necessary digital control circuit (FIG.1; Para 22; Para 25) so as to reduce the number of external components needed, thereby decreasing the complexity of the printed circuit board and the amount of circuit board area needed by the TV tuner (Para 12).

Furthermore, In re Larson, 340 F.2d 965, 968 USPQ 347, 349 (CCPA 1965), the court affirmed the rejection holding, among other reasons, that the use of a one piece construction instead of the structure disclosed in the prior art would be merely a matter of obvious engineering choice; see also Scheck v. Nortron Corp., 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983) (see MPEP 2144.04).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate Tomasz's and Keate's components on a single substrate as an engineering choice to realize the maximum integration benefits.

Regarding Claims 53, Tomasz further discloses the device is a receiver of digital terrestrial or cable television signals (Col 1 lines 53-58).

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Regarding Claims 54, Tomasz further discloses the analog signal is one of a digital terrestrial or cable television signals (Col 1 lines 53-58).

Regarding Claims 55, Tomasz further discloses the first and second ports carry signals on and off, respectively, the integrated circuit substrate (FIG.2, 210; UP_OUT and DOWN_IN).

Regarding Claims 56, Tomasz further discloses the channels of the analog signal extend over a frequency span and wherein the upconversion device upconverts the received analog signal to a frequency that is higher than an upper limit of the frequency span (Col 3 lines 27-32).

Regarding Claims 57, Tomasz further discloses the upconversion device upconverts the received analog signal to a frequency that is the sum of a desired channel frequency plus the upper limit of the frequency span (FIG.2; Col 4 lines 10-19; first mixer 208 sums up a desired channel frequency at 202 plus the upper limit of the frequency span of VCO1 204).

Regarding Claims 58, Tomasz discloses a SAW filter is a conventional filter to use (Background of Invention) and further discloses the filtering requirement for the first stage upconversion can be broad enough to reduce the interference into the second mixer (Col 4 lines 51-61). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the surface acoustic wave filter having a pass band of at least two times a frequency width of one channel so as broad enough to remove the interference from the mixing as an engineering choice.

Regarding Claims 59, 69 and 72, Keate further discloses decoding a stream of data packets corresponding to information in a desired channel of the analog signal from the filtered digital baseband signal (FIG.3, 42, 46).

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Regarding Claims 70, Tomasz further discloses the upconversion device and downconversion device in combination comprises a zero intermediate frequency dual conversion tuner (Col 1 line 53 - Co I2 line 22).

5. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomasz (US 6,400,416) in view of Uramoto et al (US 7,034,731), Keate et al (US 5,953,636), Birlson (US 2007/0182866), MPEP 2144.04 and Misaizu et al (US 5,487,089).

Regarding Claims 52, Tomasz suggests a digital baseband filter equally having a cutoff frequency equal to the frequency half-width of one channel as for analog baseband filter (Col 6 lines 1-13; bandwidth of low pass filter for each I/Q channel is the same as digital filtering stage).

Misaizu further discloses a Nyquist digital filter widely used in digital communication to remove intersymbol interference (Background of the Invention). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a Nyquist digital filter as a standard digital filter design to remove intersymbol interference.

Response to Arguments

6. Applicant's arguments with respect to claims 51-80 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

7. Claims 60-62, 66-68 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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8. The combinational features of dual conversions, up conversion first then down conversion, along with succeeding various digital processing stages and error correcting stage makes Claim 73 appear allowable. Claims 74-80 dependent on Claim 73 also appear to be allowable.

Conclusion

9. Claims 51-80 are rejected.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRED PENG whose telephone number is (571)270-1147. The examiner can normally be reached on Monday-Friday 09:30-19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hirl can be reached on (571) 272-3685. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from

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either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Fred Peng/

Examiner, Art Unit 2426

/Joseph P. Hirl/

Supervisory Patent Examiner, Art Unit 2426

September 27, 2010